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Customer Success Is Our Mission

Managing CMMI® as a Project

Intelligence and Information Systems (IIS), Garland, Texas

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Raytheon Garland SCAMPI℠ (June 2003)

- Scope: SE/SW Level 3 Staged Model
- Conducted as “registered appraisal,” led by SEI℠ Lead Appraiser
  - Diverse team: two customer representatives, three from other Raytheon sites, four from Raytheon Garland
- 6,400 objective evidence references reviewed
- 95 people interviewed in 23 separate sessions
  - Included Organizational and Program personnel, representing population of 1,900
- Lesson Learned: Managing the CMMI® Project as a development project was a successful strategy

Raytheon Garland Achieved CMMI®-SE/SW Level 3

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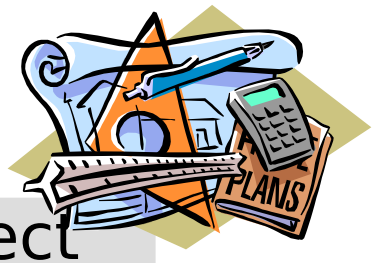
Overview

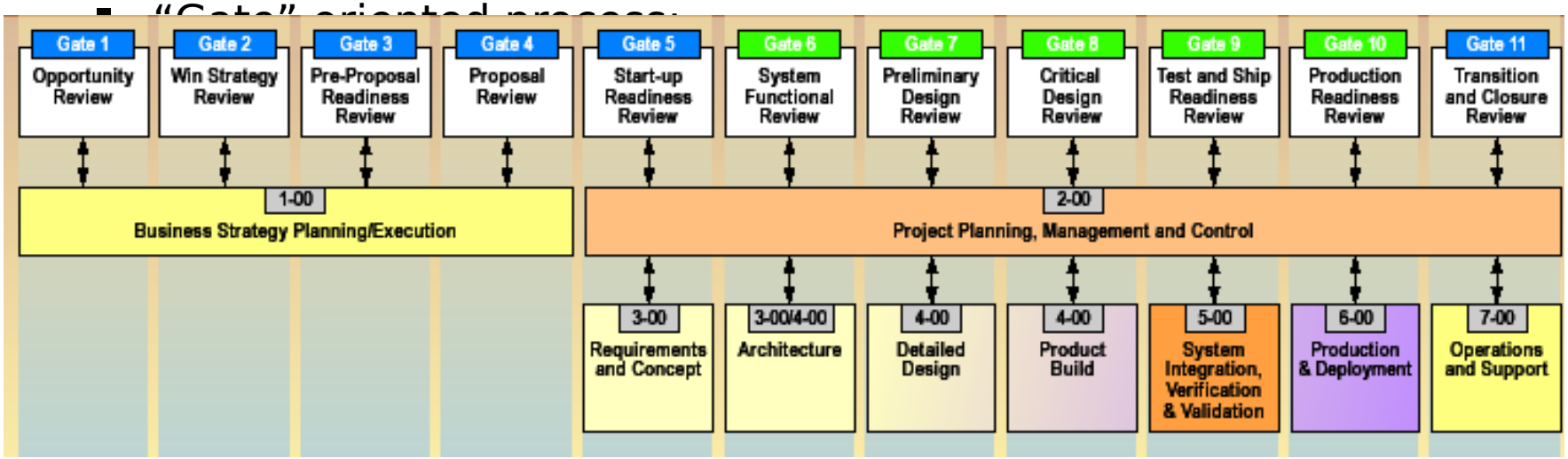
- Applying the model to the CMMI® Project is a viable approach
  - Specific Practices for most Process Areas apply
    - Project Planning, Project Monitoring and Control, Integrated Project Management
    - Risk Management, Configuration Management, Requirements Management
    - Measurement and Analysis, Decision Analysis and Resolution, Process and Product Quality Assurance
    - Requirements Development, Technical Solution, Product Integration, Verification, Validation
  - Examples follow for each Generic Practice
    - Time limitation precludes covering Specific Practices



Apply the Model to the CMMI® Project

GP 2.1 Establish an organizational policy

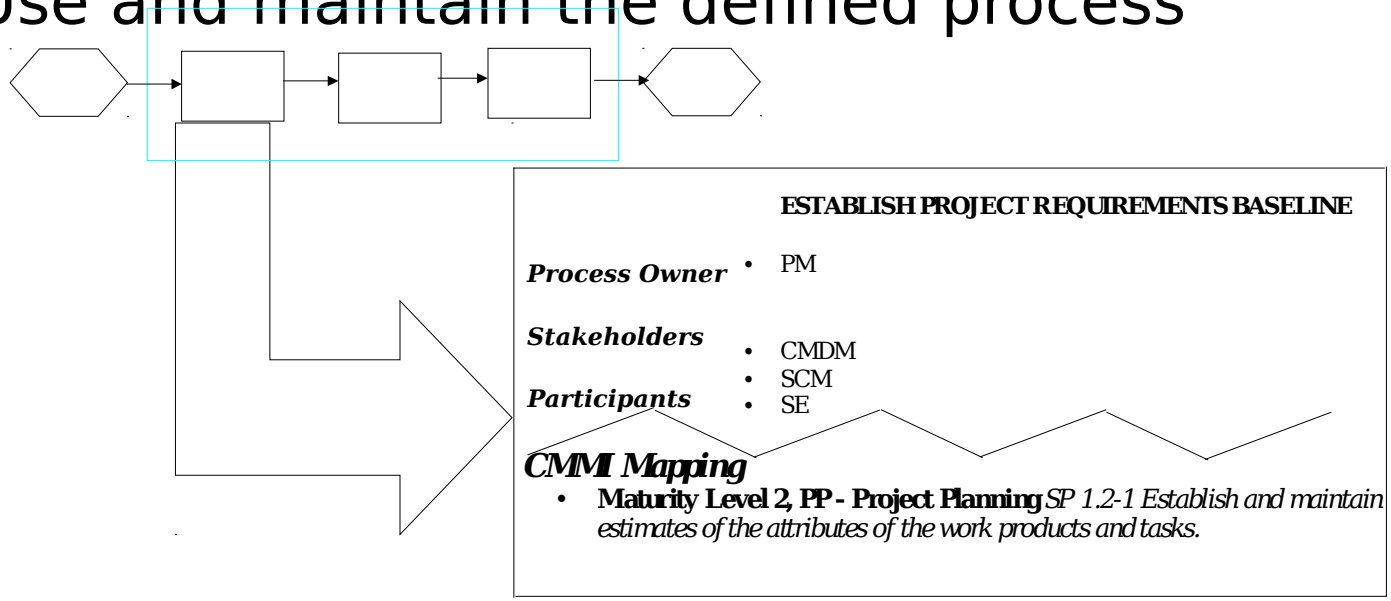
- Follow the Organization's Policy for Product Development
  - E.g., Raytheon Integrated Product Development Process (IPDP) Corporate Policy, and local policies (PM, Quality, Engineering, Supply Chain, Training)
  - "Gate" oriented process:



Apply Product Development Org Policy to CMMI® Project

GP 3.1 Establish a Defined Process

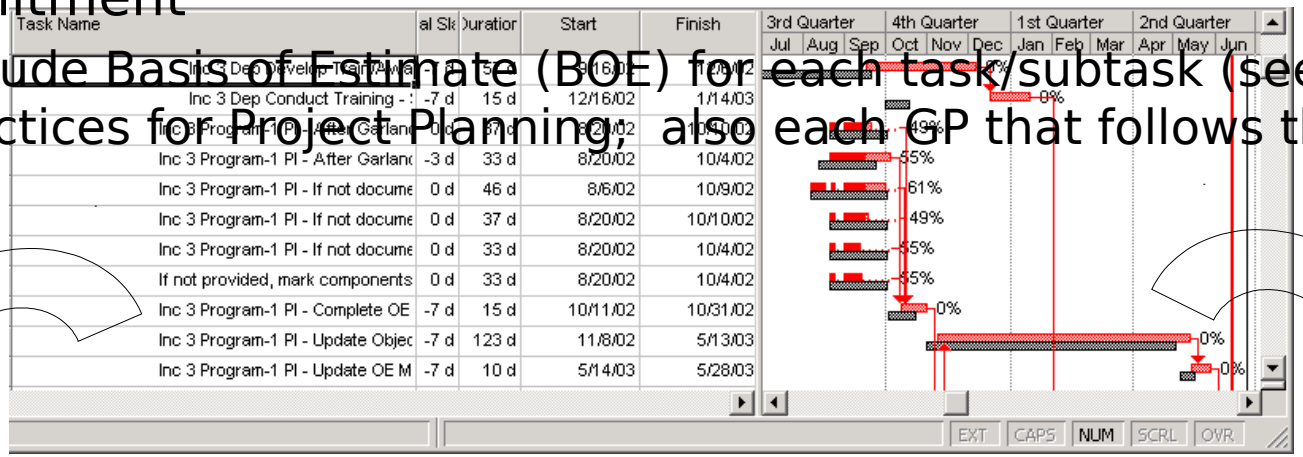
- Plan and conduct project tailoring for CMMI® Project
  - Delete/modify selected gates, stages, tasks
  - Assess impact of deletion/modification (including local procedures)
    - Tasks mapped to CMMI® practices
- Use and maintain the defined process



Tailor Org Direction/Guidelines/Enablers

GP 2.2 Plan the Process

- Develop Integrated Master Plan and Schedule (IMP, IMS)
  - Perform detailed planning and associated **resource** commitment
    - Include Basis of Estimate (BOE) for each task/subtask (see Specific Practices for Project Planning, also each GP that follows this slide)


Task Name
Duration
Start
Finish
3rd Quarter
4th Quarter
1st Quarter
2nd Quarter
Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun
Inc 3 Dep Conduct Training - 1 -7 d 15 d 12/16/02 1/14/03
Inc 3 Program-1 PI - After Garlanc -3 d 33 d 8/20/02 10/4/02
Inc 3 Program-1 PI - If not docume 0 d 46 d 8/6/02 10/9/02
Inc 3 Program-1 PI - If not docume 0 d 37 d 8/20/02 10/10/02
Inc 3 Program-1 PI - If not docume 0 d 33 d 8/20/02 10/4/02
If not provided, mark components 0 d 33 d 8/20/02 10/4/02
Inc 3 Program-1 PI - Complete OE -7 d 15 d 10/11/02 10/31/02
Inc 3 Program-1 PI - Update Objec -7 d 123 d 11/8/02 5/13/03
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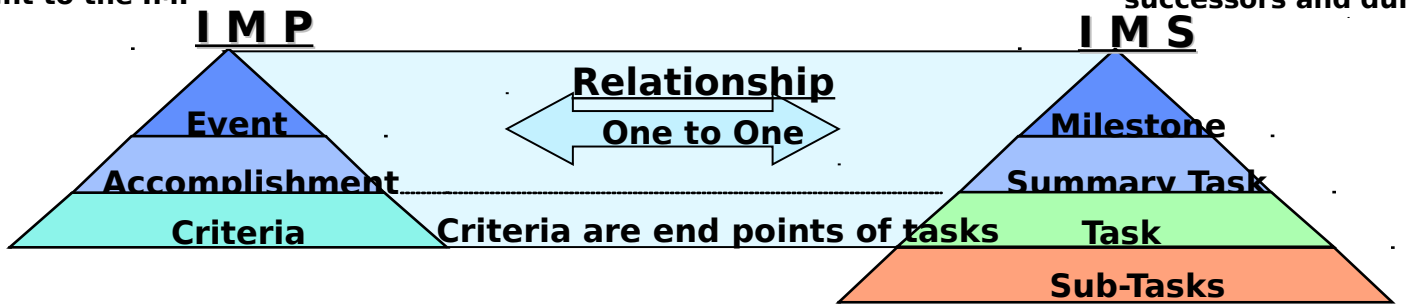
Tasks with alignment to the IMP

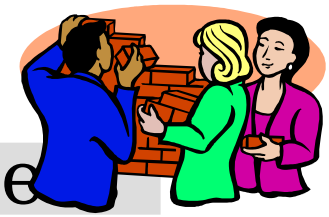
Network schedule with predeces successors and durations



Plan in Detail to Minimize Rework

GP 2.3 Provide Resources

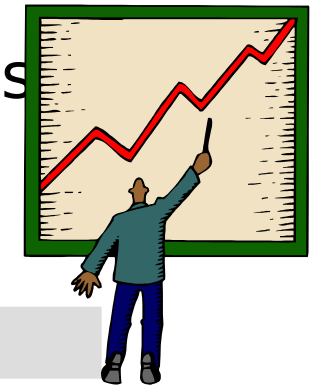
- Budget
  - Overhead, allocation, indirect, direct, inter-organizational transfer
  - Supplies & expense (other direct cost) for appraisal team
- Facilities
  - Closed/open area access & flow of data
- People
  - Ensure key roles on CMMI® project are staffed by trained, available, full-time/part-timers with right skill-set
- Tools
  - Identify tool requirements at onset of project (e.g., defect tracking, action item, risk management, objective evidence collection tools)
  - Provide early tool deployment to prevent rework and inconsistency between tracking mechanisms



Adequate Resources Foster Succe

GP 2.4 Assign Responsibility

- Address in IMP (Stakeholders and Staffing) and IMS (Resources assigned to each task)
  - E.g., Sponsors, PM, Risk Manager, Process Group, Process Action Teams, Deployment Team, Verification/Validation Team
- Ensure IMS is Linked with predecessor/successor relationship between tasks (to provide visibility of resource issues)
- Assign a Control Account Manager (CAM) to each major area
  - E.g., Process Action Teams
- Assign a Responsible Individual (RI) to each tas action item, non-compliance, requirement



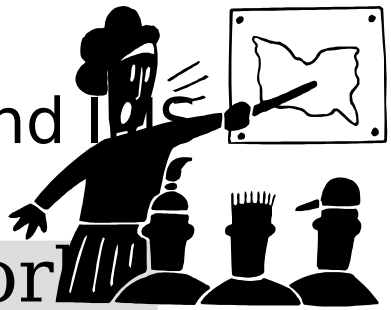
RIs Make or Break the Schedule

GP 2.5 Train People

- Determine project training requirements
  - Processes (schedule, risk, action item, objective evaluation, configuration management, requirements, design, deployment, OE collection, validation)
  - Tools (same list as for “Processes” if tool is used with the process)
  - CMMI Model for key personnel

- Determine who needs to be trained
  - Project Manager, Risk Manager, CAMs, RIs
  - Process Group staff, Process Action Teams
  - Deployment Team, Validation Team

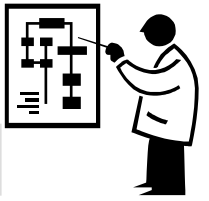
- Include training of project personnel in IMP and IMS



Trained Resources Reduce Rework

GP 2.6 Manage Configurations

- Plan for Configuration and Data Management
  - Identify items to control
    - Project (e.g., budget, schedule, plans, data files)
    - Process (e.g., process descriptions, other process artifacts)
    - Programs (e.g., objective evidence)
  - Determine levels of control needed
    - E.g., product baseline, developmental baseline, work-in-progress
  - Identify mechanism for change control
    - On-line Change Request System, Change Control Board
- Document the plan and process
- Execute according to the plan



Controlled Changes Reduce Rework

GP 2.7 Identify and Involve Relevant Stakeholders

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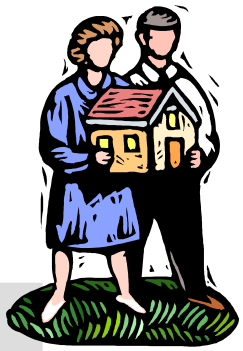
- Identify Relevant Stakeholders in the Plan(s)
  - E.g., IMP (Sponsors, Program Managers, Project Manager, Risk Manager, Process Group staff, Process Action Teams, Deployment Team, Validation Team, CAMs, RIs)
- Obtain COMMITMENT of Organizational leader - Can't be driven only from Software and Systems Engineering
  - Include CMMI® goal in performance goals of executive sponsors and flow into goals of direct reports
    - Establishes clear responsibility and accountability
  - Engage program management early
- Involve Relevant Stakeholders
  - Weekly/Monthly Status Meetings
  - Address issues on a case-by-case basis



Sponsors Set the Pace

GP 2.8 Monitor and Control the Process

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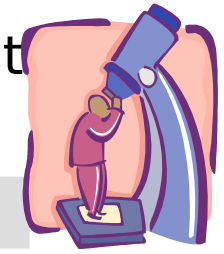
- Identify what to monitor and mechanism, in the Plan(s)
  - Examples: cost & schedule performance (CPI/SPI), risks/mitigation plan progress, contingency/recovery plan progress, opportunities/capture plan progress, actions, non-compliances, requirements changes, design changes, validation progress
- Schedule monitor/control activities
  - E.g., weekly and monthly status meetings (topics: same as above)
- Use Decision Analysis and Resolution when appropriate (as documented in the Plan)
- Take corrective actions as needed, and track to closure
  - Based on Variance Reports, action items, change request



Monitor to Determine Variances to Plan

GP 3.2 Collect Improvement Information

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- Identify what to collect and collection method (e.g., Process Asset Library), in the Plan(s)
  - Examples:
    - Results of the monitor and control activities (see GP 2.8)
    - Change Requests and disposition
    - Lessons Learned (at each major milestone)

- Collect, review, and provide to the Org Repository, per the Plan

Share Improvement Information

GP 2.9 Objectively Evaluate Adherence

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- Plan for Objective Evaluations
  - Examples:
    - Internal evaluations and audits
    - Gate Reviews (backup data)
    - External Process Group reviews
- Perform Objective Evaluations, per the Plan
- Address non-compliance issues (follow-up on observations and findings)
- Report results

Objectively Evaluate Performance

GP 2.10 Review Status with Higher Level Mgmt

- Identify what to review and frequency, in the Plan(s)
  - Examples:
    - Engineering and Business Monthly Operations Reviews
    - Monthly CMMI® Executive Steering Team Review
- Conduct reviews with higher level management as planned
  - Progress on actions from last review
  - Status of schedule, cost, risks, opportunities, non-compliances, validation (readiness for SCAMPI℠)
- Review critical issues on event-driven basis

Provide Visibility to Management

Summary

- CMMI® defines criteria for determining an organization's process maturity (an on-going effort)

- However,
  - To focus on achieving an organization's desired maturity level, the CMMI® Project should be managed as a development project (with appropriate tailoring)
  - Applying the model for planning and performing the project is a disciplined approach to achieving success

Manage the CMMI® Project as a Development Project